Reassessment of Part 420 - Status Report on the Iron and Steel Effluent Limitations Guidelines

George Jett, U.S. EPA

for

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Outline

- Regulatory development process: Reevaluating Effluent Limitations Guidelines
- 40 CFR 420: The 1982 Rule
- Current rulemaking status
  - Data Collection and Analysis Activities
  - Candidate Subcategorization
  - Candidate Technology Options Under Consideration
  - Next Steps
- Proposal October 2000, Final Action April 2002

http://www.epa.gov/ost/ironsteel

Steps to Regulatory Development

Reevaluating the Current Rule

- Data collection
- Stakeholder involvement
- Data analysis
  - Selection of preferred options
  - Technology costing
  - Economic analysis
- Calculate effluent limitations guidelines and standards

Steps to Regulatory Development, cont.

- Public Meeting
- Propose regulation October 2000
- Comment period
- Additional analyses as required
- Final Action April 2002

40 CFR Part 420

- Promulgated May 27, 1982 (47 FR 25258)
- Amended May 17, 1984 (49 FR 21024)
- Limits wastewater discharges from iron and steel mills under authority of CWA
- Production-based regulation

40 CFR Part 420

Subpart A	Cokemaking
Subpart B	Sintering
Subpart C	Ironmaking
Subpart D	Steelmaking
Subpart E	Vacuum Degassing
Subpart F	Continuous Casting

40 CFR Part 420

Subpart G	Hot Forming
Subpart H	Salt Bath Descaling
Subpart I	Acid Pickling
Subpart J	Cold Forming
Subpart K	Alkaline Cleaning
Subpart L	Hot Coating

CURRENT POLLUTANTS WITH LIMITS

CONVENTIONALS	NONCONVENTIONALS	PRIORITY/TOXICS
TOTAL SUSPENDED SOLIDS	AMMONIA-N	TOTAL CYANIDE
OIL & GREASE	PHENOLS (4AAP)	TOTAL CHROMIUM
pH	TOTAL NICKEL	HEXAVALENT CHROMIUM
	TOTAL ZINC	TOTAL LEAD
		TOTAL NICKEL
		TOTAL ZINC
		BENZENE
		BENZO(A)PYRENE
		NAPHTHALENE
		TETRACHLOROETHYLENE

CWA Sections 304, 306, and 307 require EPA to:

- Review effluent limitations guidelines and standards periodically
- Consider advances in manufacturing technologies
- Consider advances in pollution prevention
- Consider advances in end-of-pipe wastewater treatment
- Other factors deemed appropriated by the Administrator - case by case

Consent Decree with NRDC

- Requires EPA to perform industry studies and to undertake rulemaking with respect to the effluent limitations guidelines and standards on a set schedule
- "Preliminary Study of the Iron and Steel Category" completed September 1995 (EPA 821-R-95-037)
- Available at http://www.epa.gov/ost/ironsteel

Current Rulemaking Status

- Data Collection Phase
  - 70 site visits conducted
  - 16 sampling episodes performed
  - Currently reviewing industry questionnaires
  - Developed and mailed capital cost, analytical data, and production data requests
  - Meetings and contacts with stakeholders

Current Rulemaking Status, cont.

- Data Analysis Phase to Determine
  - Applicability
  - Subcategorization
  - Technology options
  - Pollutants of concern
  - Production normalized flow rates
  - Pollutant Loadings
  - Capital and annual costs for technologies

Scope of Industry

Integrated mills	21
Non-integrated mills	115
Stand-alone coke plants	16
Stand-alone DRI or sinter plants	4
Stand-alone finishing mills	33
Stand-alone hot forming mills	35

Numbers are based on current findings from literature search.

Scope of Industry, cont.

Stand-alone cold forming mills	66*
Stand-alone pipe and tube mills	168*
Stand-alone hot dip coating mills	110*
Stand-alone wire mills	253*

* Some of these sites may not fall under the Iron and Steel Rule. They are being considered for regulation under the Metal Products and Machinery (MPM) Rule, as detailed on the next slide.

MPM Applicability

We anticipate that the following types of facilities are being considered under the MPM Rule:

- Stand-alone cold forming of bar products (sheet and strip remain under Iron and Steel)
- Stand-alone cold formed pipe and tube mills
- Stand-alone wire mills
- Stand-alone batch hot dip coating mills

Candidate Subcategorization

SUBCATEGORY	SEGMENT	SUB-SEGMENT
A. Cokemaking Operations	By-Product	
	Other - Nonrecovery	
B. Ironmaking Operations	Blast Furnaces	
	Sintering	Sintering - dry
		Sintering - wet
C. Integrated Steelmaking Operations	Basic Oxygen Furnaces	Wet - Open Combustion
		Wet - Suppressed Combustion
		Semi-Wet
	Vacuum Degassing	
	Continuous Casting	

Candidate Subcategorization, cont.

SUBCATEGORY	SEGMENT	SUB-SEGMENT
D. Non-Integrated Steelmaking and Hot Forming Operations	Electric Arc Furnaces	Dry
		Semi-Wet
	Continuous Casting	
	Hot Forming	Section
		Flat
		Pipe & Tube
E. Integrated Hot Forming Operations, Stand-Alone Hot Forming Mills	Primary	Carbon and Specialty
	Section	Carbon and Specialty
	Flat	Carbon and Specialty
	Pipe & Tube	Carbon and Specialty

Candidate Subcategorization, cont.

SUBCATEGORY	SEGMENT	SUB-SEGMENT
F. Steel Finishing Operations	Carbon Steels	Acid Pickling Sulfuric
		Acid Pickling Hydrochloric
		Cold Rolling
		Alkaline cleaning
		Hot Dip Coatings
		Electroplating
	Specialty Steels	Descaling - Salt Bath, ESS
		Acid Pickling - Combination
		Cold Rolling
		Other

Candidate Subcategorization, cont.

SUBCATEGORY	SEGMENT	SUB-SEGMENT
G. Other Operations	Direct Iron Reduction	
	Iron Carbide	
	Briquetting (HBI)	

Candidate Technology Options

SUBCATEGORY	TECHNOLOGY OPTIONS
A. Cokemaking Operations	Existing sources: • Tar removal; equalization; ammonia stripping (free/fixed); equalization; temperature control; biological treatment • With and without post filtration and/or GAC • With or without alkaline chlorination, metals precipitation, post filtration New sources: • Zero Discharge (nonrecovery, greenfields, etc.) BMPs: • NCCW monitoring and repair programs

Candidate Technology Options, cont.

SUBCATEGORY	TECHNOLOGY OPTIONS
B. Ironmaking Operations	Existing and New Sources: • Coarse solids removal; sedimentation; cooling; high rate recycle; metals precipitation; post filtration • With and without alkaline chlorination BMPs: • Secure slag pits • NCCW monitoring and repair programs

Candidate Technology Options, cont.

SUBCATEGORY	TECHNOLOGY OPTIONS
C. Integrated Steelmaking Operations	Existing and New Sources:
– Basic Oxygen Furnaces	• Coarse solids removal; sedimentation; high-rate recycle with softening; metals precipitation • With or without post filtration
– Vacuum Degassing	• Solids removal; cooling; high rate recycle; metals precipitation • With or without post filtration
– Continuous Casting	• Scale pit, filtration; cooling; high rate recycle • With or without metals precipitation and/or post filtration

Candidate Technology Options, cont.

SUBCATEGORY

C. Integrated Steelmaking Operations, cont.
   - Basic Oxygen Furnaces, Vacuum Degassing, and Continuous Casting

TECHNOLOGY OPTIONS

BMPs:

- Cascade of blowdowns from Continuous Caster and Vacuum Degasser to Basic Oxygen Furnace

Candidate Technology Options, cont.

SUBCATEGORY	TECHNOLOGY OPTIONS
D. Integrated Hot Forming Operations and Stand-Alone Hot Forming Mills	Existing and New Sources:
– Carbon Steel Mills	• Scale pits with oil removal; recycle flume flushing water; roughing clarifier with oil removal; multi-media filtration; cooling; high rate recycle
– Alloy and Specialty Steel Mills	• Same as Carbon Steel with or without metals precipitation and post filtration, as required
	BMPs: • Oil maintenance programs on mills

Candidate Technology Options, cont.

SUBCATEGORY

E. Non-Integrated Steelmaking and Hot Forming Operations
   - Carbon Steel Mills and Alloy and Specialty Steel Mills

TECHNOLOGY OPTIONS

Existing and New Sources:

- EAF - dry, semi-wet APC
- Casting - scale pit, filtration; cooling; recycle
- Hot Forming - Scale pits with oil removal; recycle; flume flushing water; roughing clarifier with oil removal; multi-media filtration; cooling; high rate recycle; with or without metals precipitation and post filtration

BMPs:

- Oil maintenance programs on mills

Candidate Technology Options, cont.

SUBCATEGORY	TECHNOLOGY OPTIONS
F. Steel Finishing Operations	Existing and New Sources:
– Carbon Steel Mills	*Process Controls*
• Acid Pickling	• Counter-current rinsing; recycle of fume scrubber water; indirect heating of acid baths
• Cold Rolling	• In-line treatment and reuse of rolling solutions
• Hot Dip Coating	• Same as pickling, where applicable
• Electroplating	• Same as pickling, where applicable; recovery of plating solutions; recovery of hexavalent chromium solutions

Candidate Technology Options, cont.

SUBCATEGORY	TECHNOLOGY OPTIONS
F. Steel Finishing Operations, cont.	Existing and New Sources, cont:
– Alloy and Specialty Steel Mills	*Process Controls*
• Descaling	• Indirect cooling and recycle of quench water
• Acid Pickling	• Same as for carbon steel with acid purification systems
• Cold Rolling	• Same as for carbon steel

Candidate Technology Options, cont.

SUBCATEGORY

F. Steel Finishing Operations, cont.

  – Carbon Steel Mills and Alloy and Specialty Steel Mills

TECHNOLOGY OPTIONS

Existing and New Sources, cont:

End of Pipe Treatment

- Hydraulic and waste loading equalization; multiple-stage pH control for metals precipitation; sedimentation
- With or without post filtration

Candidate Technology Options, cont.

SUBCATEGORY	TECHNOLOGY OPTIONS
G. Other Operations	Existing and New Sources:
Direct Iron Reduction	TBD
Iron Carbide	
Briquetting (HBI)	

Next Steps

- Continue data collection
  - Outstanding responses to Cost Surveys and Analytical and Production Follow-up Surveys
  - Vendor cost data
  - Any additional data supplied by stakeholders
  - Data from POTWs

Next Steps, cont.

- Continue data analysis
  - Completion of databases
  - Selection of Pollutants of Concern
  - Production Normalized Flows
  - Pollutant Loads
  - Pollutant Reduction
  - Cost
  - POTW Pass-through Analysis
  - Water Bubble Decision
  - Removal of Central Treatment Provision
  - Economic Impact Analysis
  - Environmental Impact Analysis
  - Development Document
  - Administrative Record Preparation

Next Steps, cont.

- Agency Rulemaking Process
  - Work group concurrence
  - Red border rule
  - Option selection
  - OMB review
  - Proposed rule

EPA Contacts

George Jett, Project Manager

202-260-7151

jett.george@epa.gov

U.S. EPA (4303); 401 M Street, SW; Washington, D.C. 20460

Kevin Tingley, Project Engineer

202-260-9843

tingley.kevin@epa.gov

Bill Anderson, Project Economist

202-260-5131

anderson.william@epa.gov

FAX: 202.260.7185

Schedule

Proposal - October 2000

Final Action - April 2002

EPA's Iron and Steel Web Site

http://www.epa.gov/OST/ironsteel